

Canadian – United States Army Interoperability in the Age of Modularity

A Monograph

by

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INTRODUCTION

Interoperability between the United States and Canadian armies has been a topic of intense research, discussion and even emotion for many years. From the Canadian perspective, much of the debate has centered on strategic level issues such as defense budgets, sovereignty and the ability to retain a Canadian culture while maintaining close ties to the United States.

Canada's numerous defense analysts and think tanks generally agree that increased interoperability with the United States would provide enhanced national security at a lower monetary cost. However, Canada is a country with intense nationalistic feelings and most studies, once having confirmed the pragmatic advantages of closer defense ties with the United States, immediately begin an analysis of the perceived social and cultural disadvantages inherent to a defense policy that is intertwined with the United States. As important as this strategic debate may be, it has overshadowed the more technical, "boots on the ground" question of whether the Canadian Army has now, or will have in the foreseeable future, the ability to work effectively with the United States Army.

While it is necessary for government leaders and the Canadian population as a whole to study the sovereignty issues, it is just as important for Canadian military to study their ability to work with United States military forces. In the context of the current world situation, and particularly in light of the Global War On Terrorism (GWOT), it is safe to conclude that Canada will be working closely with United States forces in the future. Although there have been many studies on strategic and operational issues, there has not, to this author's knowledge, been a study conducted that assesses interoperability between the two armies as it relates to the future force restructures that are currently taking place in both countries. Both the American and Canadian armies are undergoing unprecedented transformation that includes sweeping changes to doctrine, equipment and organization. These changes present both countries with unique opportunities to enhance interoperability.

If interoperability at the tactical and operational levels was at best a guessing game in the past, our ability to work together today and into the future is even more unclear. This is not to imply that extensive work in this area has not been done. Both armies have numerous people dedicated to the issues of interoperability. As well, multinational organizations such as the North Atlantic Treaty Organization (NATO) and the American, British, Canadian and Australian (ABCA) group have officers dedicated to researching the issues of interoperability. However, more often than not the individuals working the questions of interoperability have produced results that concentrate on only one aspect of the system. Clearly an effort is required to gather this information and present it in a format that will provide future planners with one encompassing document that will assist them in planning United States/Canadian operations. This is especially so in light of the force structure changes occurring in both the United States and Canada.

The reality of the current Canadian Army is that it is capable of deploying no land force greater than a brigade combat team, or in Canadian vernacular, a Canadian Mechanized Brigade Group (CMBG). It is also the reality that, unless the survival of Canada or a close ally was at stake, the likelihood of deploying a full CMBG on any operation is virtually zero. However, much of the concern with deploying a full CMBG on operations is a result of two factors. First, because of an exceptionally high operational tempo, there has been a serious lack of brigade level training in the Canadian Army during the past ten years. Second, it would take substantial augmentation from throughout the Army to bring a standing CMBG up to wartime strength. With respect to training, this problem has been addressed with the creation of a national training center and the reinstitution of CMBG level training in 2003. The second problem of augmentation can be addressed by developing a standard table of organization and equipment for a standing CMBG that will have the permanent and achievable mission of reinforcing an American UEx. Before assessing the feasibility of this second solution however, one must first understand what the Canadian and United States armies of the future will look like.

This monograph will examine the history, force structures and interoperability issues associated with expeditionary operations evolving the Canadian and United States armies. To accomplish this aim, this monograph, will be structured to help the reader ask the most fundamental planning questions. First, what will the Canadian and United States armies look like following transformation? Second, does this unprecedented level of transformation present opportunities for increased interoperability. Third and last, what sort of systemic changes can be made to the way Canada and the United States armies prepare themselves for future coalition operations? The Canadian and United States Armies have worked closely together in the past during combat operations. The question is not whether they will work together again in the future as they certainly will. The important question is whether planners will be willing to pay the price for interoperability now, or whether they will defer the price to their soldiers, to be paid on the ground during a future operation.

Chapter One – Canadian Future Force Employment

Background

The changing world order since the end of the Cold War has dramatically altered the operations undertaken by the Canadian Forces. During the Cold War, the Canadian Army was primarily organized, trained and equipped to fight a mechanized, high intensity land battle in Europe against the Warsaw Pact. Since the end of the Cold War, the Canadian Army has undergone significant changes, most of which have been the result of an expected peace dividend. The Canadian Army of today is not like that of ten or even five years ago. Whether reality or perception, many of the changes during the past fourteen years have been seen as reactionary, based more on capricious defense budgets than on a long term plan. The Canadian Army has attempted to rectify this situation by recently producing two key documents, *Advancing With Purpose: The Army Strategy*, and, *Purpose Defined: The Force Employment Concept for the*

Army. Published in 2002 and 2004 respectfully, these documents are the map for the Canadian Army's journey into the future.

For ease of understanding and organization of effort, the Canadian Army divides its force planning into three distinct phases, the Army of Today, the Army of Tomorrow and the Army of the Future. The three horizons are the Army of Today (the Army that currently exists), the Army of Tomorrow (encompasses the 5-10 year planning period), and the Army of the Future (20 or more years ahead). The Army of Tomorrow is the focus of force development work that is coordinated by the design of two structural models. The first model being the intentions for the next ten years, and guides longer-term activities such as experimentation and equipment acquisition prior to actual procurement decisions. The second model is the Interim Model that constitutes a concrete description of what the Army will look like in about five years. This Interim model is developed in sufficient detail to guide the necessary changes to the Army of Today as well as provide a useful starting point for capability gap analyses that influence the long-term Army of the Tomorrow plan.¹ For the purposes of this monograph, the Army of Today and Tomorrow will be the focus of attention.

As stated, the Canadian Army has recently published a policy document entitled, *Purpose Defined: The Force Employment Concept for the Army*. In this document the Army has laid the planning foundation for the organization and equipment necessary to meet the challenges for the Army of Tomorrow. Although Canada does have a defense white paper it is horrendously out of date having been published in 1994. Although the publication of newer foreign policy and defense white papers have been long expected, it became clear that the Canadian Army would have to cease waiting for these documents and lead the way with their own paper on how the Army of Tomorrow and the Future will be employed.

¹ Canada, Department of Defence, *Advancing with Purpose: The Army Strategy*, (Ottawa: Department of National Defence, May 2002), 8.

Advancing With Purpose: The Force Employment Concept for the Army, or the FEC for short, was published in March, 2004 by the office of the Chief of the Land Staff who acts as both the commander of Canadian Army field forces as well as a Chief of Staff in the United States Army sense. In this document the vision of the Canadian Forces is described as a credible, modern army that is capable of, “providing forces to the land component of a coalition as well as filling staff and command appointments throughout the coalition architecture.”² It also acknowledges the reality that it is very unlikely that Canada will ever field a joint task force for expeditionary combat operations. This does not rule out the deployment of a Canadian only joint task force for domestic operations as was done during the Manitoba floods of 1997 and the Ice Storm in Western Ontario and Eastern Quebec in 1998, where nearly 100% of available Army troops were deployed. Domestic operations aside, and for the purpose of this monograph, it can and should be assumed that the Canadian Army will only commit troops for combat operations abroad as part of a coalition joint task force.

Canadian Mechanized Brigade Organization

According to *The Army Strategy*, the Canadian Army will comprise, “task-tailored forces (that) will have the ability to operate independently of a larger Canadian formation, to “plug into” the land component of a coalition, to work in a joint environment and to take other coalition assets under tactical command or control.”³ Although advances have been made in great earnest over the past decade, the Canadian Army’s doctrine is still changing at a rapid pace. Much of the current deficiency revolves around the new Force Employment system.

Within the Canadian Army, the Canadian Mechanized Brigade Group (CMBG) is the standing, all arms formation. To say that the Canadian regular force army (Active Component in United States Army parlance) consists of a total of three separate CMBGs would be an accurate

² Ibid., 8.

³ Canada, Department of Defence, *The Force Employment Concept for the Army*. Ottawa: Department of National Defence, 31 March, 2004, 11.

summation of the available deployable land force. Although the Canadian Army Reserve Force is organized into brigade structures, in a practical sense the Reserve force will continue to augment the Regular Force predominately with individual positions and occasionally with units up to platoon size.

There are two important planning factors with respect to CMBGs that American planners should note. First, the CMBG depicted below at figure 1 is a notional force that has been used recently to wargame Army of Tomorrow capabilities. Current CMBGs do not include a Mobile Gun System (MGS), nor do they possess such a robust chemical decontamination company. Although a notional unit, the CMBG depicted below could, with augmentation from the other brigades, be deployed within a few years once the MGS is procured. Second, the commitment of a full CMBG to an operation has not occurred since 1993 when 4 CMBG was redeployed from Germany and disbanded. The commitment of a CMBG to a deployed operation would in reality represent the commitment of the entire Canadian Army. Although this scenario is possible, it is unlikely to occur in any situation short of a direct threat to Canadian sovereignty or security. The most likely scenario for the future, as has been proven on numerous occasions over the past 15 years, would be the deployment of a battalion task force along with separate national command and support elements, augmented by surge movement and engineering resources as required. During past operations, the deployment of a CMBG headquarters as a multi-national command element during stability operations has also been done. As stated, chapter four of this paper will further study possible Canadian Army contributions to a coalition force. The most likely CMBG organization that would be committed to a coalition operation is depicted at figure 1.

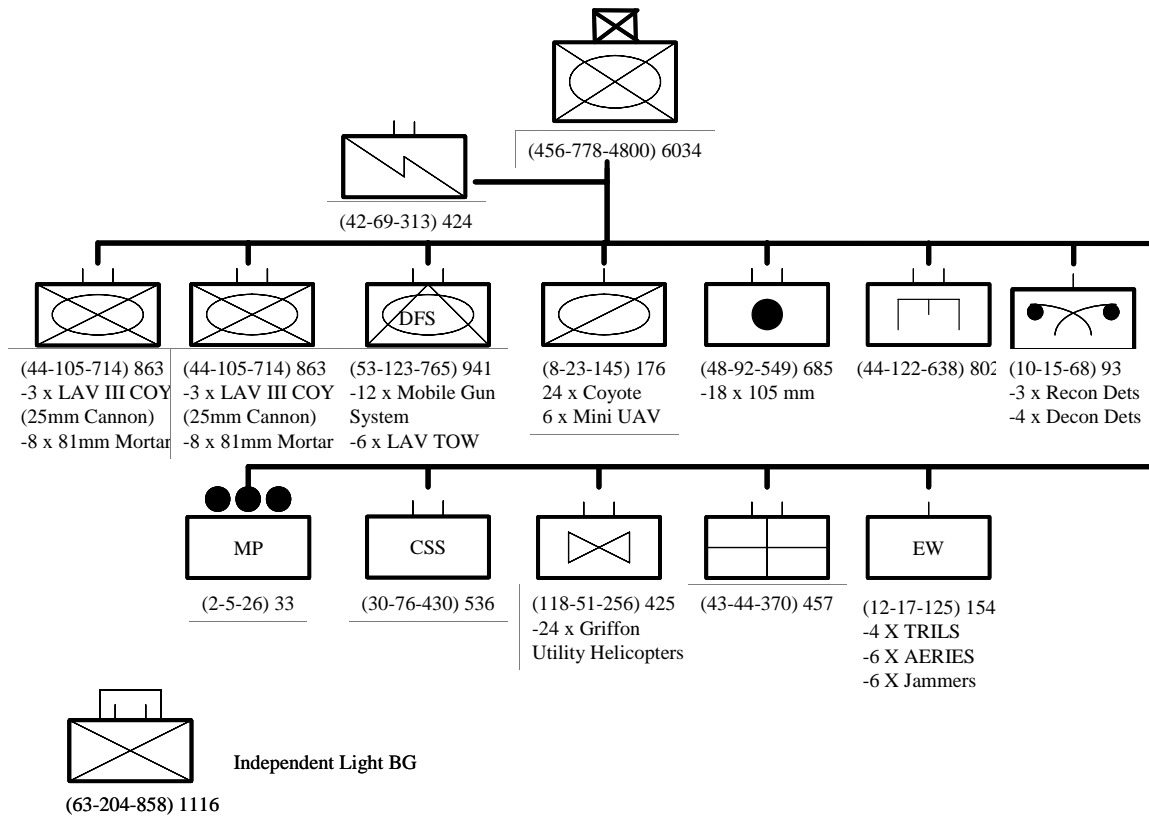


Figure 1: Canadian Mechanized Brigade Group.⁴

Force Employment Concept

To properly understand the Canadian Army of the Tomorrow, there are key doctrinal concepts that must be explained. One of the elements that have been addressed is the five operational functions that have replaced the six combat functions of the past.⁵ The five operational functions of act, sense, shield, sustain and command are equivalent to the United

⁴ Canadian Main Contingency Force brigade group used during the land combat development force employment wargames, Director Army Doctrine, May 2004.

⁵ FEC., 13.

States Army's operational functions. The remainder of this chapter will discuss the Canadian Army's new FE Concept in the framework of the five operational functions.

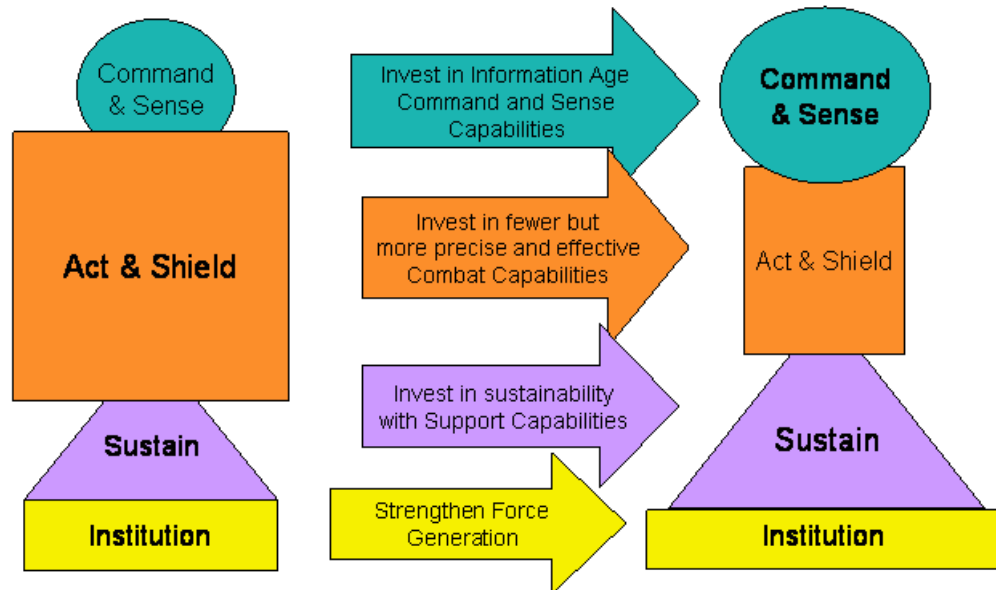


Figure 2: Evolution of the Canadian Army Force Employment Concept.⁶

Command

The Canadian Army defines Command as, “the creative expression of human will necessary to accomplish a mission through the exercise of the authority vested by the national government and the chain of command for the direction, coordination and control of military forces.”⁷ Mission command is the underlying operating philosophy and is viewed by the Canadian Army as the “empowerment of soldiers and leaders to use their initiative, will and professional expertise to carry out all tasks and to operate independently within the commander’s intent.”⁸

⁶ Ibid., 7.

⁷ Ibid., 16.

⁸ Ibid.

Command Supports is divided into two sub-components, Information Management and Systems Management.⁹ Although in the past these responsibilities were assigned to the staff and signals personnel respectively, it is recognized that the line separating these functions has become blurred and that total integration of these two functions is required. Having accepted the requirement to avoid two separate, stove-piped systems, the Canadian Army will continue to organize itself along the six functions of the continental staff system at brigade level. New to the CMBG headquarters is a Lieutenant-Colonel Chief of Staff who has the responsibility of ensuring that all of the staff branches are working in concert towards a plan that will achieve the commander's intent.

ACT

The Canadian Army, like that of the United States, has embraced the concept of effects based operations (EBO). According to the FEC, Canada views EBO as an approach that focuses on effects rather than on platform based firepower. EBO is applied to the full spectrum of conflict across all three levels of war including all national elements of power. EBO concentrates more so on the moral plane than firepower based operations. Effects are characterized as direct or indirect, undesired or unexpected.¹⁰ Doctrine clearly lays out that the function of Act depends heavily on the functions of Command and Sense.

Synchronization remains a key to achieving the desired effects with the available means. This is not a new term for the Canadian Army and it shares its definition with the United States. However, in the Canadian Army, the change to a medium weight force has increased the doctrinal emphasis on synchronization. Clearly with the new force structure, mission command, EBO and synchronization will no longer be just force multipliers allowing a more decisive victory, but instead a real necessity for successful operations.

⁹ Ibid., 17.

¹⁰ Ibid., 24.

A key factor that has and will continue to affect the Canadian Army's ability to act is its force structure. Over the past year, the Canadian Army acknowledged that the changes to its force structure have produced a field force that can no longer be considered heavy. Upon the return of Canadian Forces from Germany in 1993, the Canadian Forces underwent a total regular force reduction from 80,000 to 60,000 all ranks with the Army representing approximately one third of those forces. At that time, 4CMBG, located in Germany, was the only truly heavy formation in that it consisted of a completely tracked combat force. With Leopard I main battle tanks, M109 155mm self-propelled (SP) artillery and M113 armored personnel carriers, it was the elite CMBG of the Canadian Forces. Upon its disbandment and return from Germany, the armored and artillery regiments were divided evenly amongst the three Canadian based CMBGs, with a company of tanks and SP guns going to each. Designed to retain a heavy capability within the Army generally, and to create a small heavy capability within each CMBG specifically, this force structure change in fact merely diluted the combat power and denied the capability of any one of the CMBGs from being able to train as a truly heavy force.

At the same time, defense budget cutbacks combined with a greatly increased operational tempo all but eliminated training above the battalion task force level. This level of training combined with the force structure in place for the better part of ten years eventually would lead to two important decisions that would change the basic force capability of the Canadian Army. First, in 2000, an army level training schedule was instituted that was designed to address the increased operational tempo and lack of funds. This was accomplished by designing a three year training schedule that would focus funds, equipment, personnel and other resources on one CMBG each year. It was hoped that this change to the previous training regime would allow greater predictability and operational readiness. The second change was a more recent decision to mothball the tanks and SP guns and to formally designate the Canadian Army from heavy to medium. This change in nomenclature merely made formal the changes that had been occurring since 1992. As a result of these changes, the Canadian Army has officially changed its

designation from a heavy, general purpose combat force to a medium, multi-purpose combat force. This reality will be an important factor later in the paper when issues of interoperability are discussed in more specifics.

Sense

This operational function within the Canadian Army has been improved exponentially over the past few years with promising work on the horizon. Sense is the operational function that ensures that the commander and his staff have the necessary understanding of the battle space to successfully accomplish the mission.¹¹ As with all militaries, the Canadian Army's biggest challenge is developing a system that will allow information to be turned into understanding. In the past this has been a weakness in Canadian operations for two very basic reasons, namely personnel and equipment. First, sufficient numbers of trained intelligence officers and NCOs have not existed in the Canadian Army in numbers comparable to the United States Army. Over the past twenty years, Canadian CMBG Headquarters have been authorized a total of one Intelligence Officer. This obvious shortfall has been addressed recently with the addition of a more robust intelligence cell within the brigade headquarters. The second reason for weakness has also been addressed with the acquisition of world class sensing systems. Through the use of radar, infrared and optical systems, the Coyote surveillance vehicle, is capable of detecting personnel movement out to three kilometers and vehicle movement out to 12 kilometers.¹² As well, the planned addition of unmanned aerial vehicles (UAV) will provide an even greater ability for the commander and staff to gain battlefield situational awareness.

The Canadian Army's classes of information have existed for some time and mirror those of the United States Army model.

¹¹ Ibid.,20.

¹² Canadian Army website
http://www.army.forces.gc.ca/lf/English/2_0_42_1.asp?uSubSection=42&uSection=1 December 15, 2004.

Classes Of Information Canadian Army

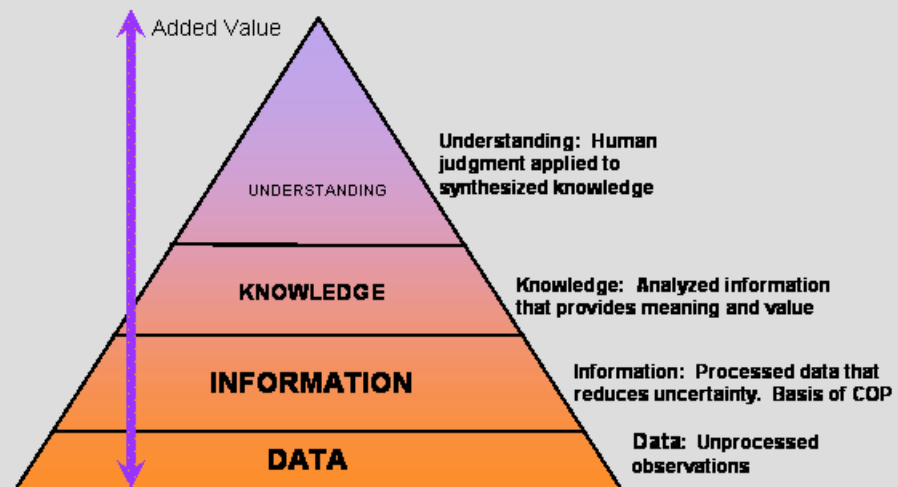


Figure 3: Canadian Forces Classes of Information.¹³

Data, the lowest form of information, is gathered by numerous sensors across the battlefield, the majority of it from soldiers on the ground. One of the best developments in this area over the past ten years of operating in exclusively non-linear areas of operations has been the acceptance that the ubiquitousness combat service support soldier is a very valuable source of information. Data is processed using methods that include filtering, fusing, formatting, organizing, collating, correlated, plotting, translating, categorizing and arranging data¹⁴. Information that has been analyzed for meaning and value by both the staff and the commander relative to the battlefield environment is considered knowledge. Understanding is synthesized knowledge to which human judgment has been applied. According to the FEC, the understanding

¹³ FEC, 21.

¹⁴ Ibid.

of knowledge is based on the individual's experience, training and intuition. According to Canadian doctrine, understanding occurs "inside the commander's head."¹⁵

Intelligence, surveillance, target acquisition and reconnaissance (ISTAR) integrates intelligence with the other functions of ISTAR in order to provide staff and commanders with situational awareness.¹⁶ The Canadian Army future force includes a CMBG Headquarters ISTAR Coordination Centre (ISTAR CC) that will be responsible for processing and displaying all enemy and ground information with the aim of allowing the cueing of maneuver, strike or other ISTAR assets. The G2 operations at CMBG headquarters will perform the function under the direction of the G3. Inextricably linked with the ISTAR CC is the All Source Center (ASC) at CMBG Headquarters which is operated by the G2 Operations. Within Canadian doctrine, the ASC is seen as the "I" in ISTAR and may or may not in the future become a cell within the ISTAR CC. Future study will confirm this relationship. It is also envisioned that each unit with a sensor under direct control of the battle or brigade group will have a liaison person in the ISTAR CC.

Shield

Shield is the operational function designed to ensure that freedom of action and survivability of forces from the influence of hostile actions in the physical, moral and cyber planes.¹⁷ The Canadian Army cites asymmetric attack in a non-linear and non-contiguous battlespace as the most likely threat of the future. This threat, combined with the intermingling of combatants with non-combatants will leave friendly forces vulnerable to attack. As well as the asymmetric threat, the Canadian Army also recognizes the threat posed by weapons of mass destruction, both at home and abroad. There are four key capabilities that go towards increasing the protection of the Canadian Army's forces and freedom action. They are combat engineers, air

¹⁵ Ibid.

¹⁶ Ibid., 22.

¹⁷ Ibid., 28.

defense artillery, military police and nuclear, biological and chemical defense (NBCD) resources. Each of these capabilities will be explained in greater detail.

Each CMBG has a battalion of combat engineers who, like their American counterpart, are responsible for mobility, counter-mobility, survivability and general engineering tasks. Canadian combat engineers bring both excellent equipment and highly trained personnel to the fight. Capabilities include typical sapper support to combat arms, armored and light heavy equipment used for mobility and counter-mobility operations as well as a small vertical construction capability. Although proficient in the construction of compounds and parking areas, CMBG engineers have very limited road maintenance capability.

Air defense artillery is another example of the Canadian Army's ability to field a capability at the CMBG level while lacking any more robust capability at a higher level. Air defense in the CMBG is provided by a battery of air defenders equipped with the Javelin air defense missile system. A very low level air defense system, the Javelin is capable of engaging targets at a distance of 4.5 kilometers at an altitude of less than 1000 meters.¹⁸

Although highly trained and respected, when compared with their United States Army counterparts, Canadian Army Military Police (MP) will be seen as being insufficient in numbers. At first glance the United States Army officer will no doubt be troubled by the lack of MPs within the CMBG, and with good reason. Each CMBG contains only one platoon of MPs who are tasked with both traditional field MP duties as well as law enforcement¹⁹. Emerging Canadian Army doctrine does acknowledge that the increasingly non-contiguous environment of the modern battlefield has created difficulty in maintaining a basic level of security from both hostile combatants and criminal elements. The fact of the matter is that MPs within the Canadian Army system are not trained to a sufficient level in infantry tactics, nor are they equipped for such

¹⁸ Simon Fraser University Canadian-American Strategic Relations index of CF equipment, <http://www.sfu.ca/casr/101-adjav.htm> December 15, 2004.

¹⁹ Ibid., 31.

operations. As a result they do not have the force protection capabilities of their United States Army counterparts where MPs are capable of acting as light infantry in the defense. The reality is that Canadian MPs at the CMBG level are capable, with significant augmentation, of providing local security to base camps and airfields. However, at this point in the paper it will suffice to state that their lack of firepower and training do not allow them to provide a response to a Level II threat as defined by United States Army doctrine.

As with the MPs, NBCD defense capabilities are lacking in the Canadian Army. To gain insight into the Canadian Army's NBCD capability, a quote from the "Force Employment Concept" is in order. "NBCD is primarily a joint capability that is delivered in an interdependent manner between all elements of a deployed force. The Army will continue to build upon the expertise and capabilities available in the wider Canadian Forces."²⁰ American officers that are confused by this quote should take heart; your Canadian counterparts are equally as confused. Detection and decontamination capabilities at the CMBG level are very weak. The job of decontamination, in the current structure, is a secondary duty given to the Laundry and Bath platoon of the combat service support unit. This situation however is being improved and as the doctrinal Army of Tomorrow takes form, there is a planned introduction of a chemical company capable of CMBG level decontamination. Until the time comes when this capability is in place however, United States Army planners should be aware that any Canadian attachments will require assistance with decontamination should the worst case manifest itself.

Sustain.

A cursory study of past multinational operations would quickly justify the average American planner's skepticism of foreign nations' abilities to sustain their forces during deployed operations. This is a valid concern since coalition partners that cannot support

²⁰ Ibid.

themselves quickly transform from an asset to a liability. However, the Canadian Army maintains a robust operational and tactical logistics capability. An explanation of each of Canada's supply, transportation and maintenance capabilities is well beyond the scope of this paper. It should suffice to point out however that the Canadian Army is capable of self-sustainment in all types of medium to high intensity operations. There are two shortfalls worth mentioning however. First, the Canadian Army has a very limited ability to conduct aerial resupply. Second, Canada does not have the strategic assets to self-deploy. Except for small numbers of light vehicles and equipment to be used by an advance party, the vast majority of Canada's personnel and equipment must be deployed using either commercial or allied military resources. However, as this is the norm, the Canadian Forces have become very proficient at using civilian resources to quickly deploy to areas of operation throughout the world.

Chapter Two - United States Modular Force

Background

Change is a constant within any organization and the United States Army is no exception. Not a stranger to change, the United States Army has been a leader in change during the past century. Neither is the rate of change occurring today unique, most closely resembling those that occurred under the direction of Secretary of War Elihu Root in 1903 as a result of the industrial revolution.²¹ Even with ongoing changes, one could still make the argument that the structure of United States Army forces has not substantively changed since its inception. In fact, the modern United States Army still resembles that which fought and won in World War II and as a result of that experience, there has not been the impetus to "mess with success".

Since the end of the Cold War however, there have been a number of changes in the world security situation that have caused armies throughout the west to alter the way that they

²¹ United States Army Unit of Employment White Paper, Version 3.5, 16 July, 2004. 11.

train, organize and deploy troops. However, since Operation Just Cause in 1990, the United States Army has been committed to a series of conflicts on an almost continual basis. As well, the United States has been part of the world trend of continuously increasing operations other than war. When planning these operations, the traditional corps and division organizations of the past have proven to be less than flexible. Often, peace support operations require a different mix of forces than those found in a traditional division, especially in the areas of civil affairs, military police and combat service support. Force generation for such operations, often with force caps that are based less on operational necessity than on political factors, has become increasingly problematic with capabilities having to be amalgamated from various different units. As well, the modern battle space has become increasingly non-contiguous which raises new considerations, especially in the area of combat service support, which further reduces the effectiveness of the division structure. Modern operations have increasingly become distributed and simultaneous combat actions over larger areas. When conducting combat operations, forces are expected to simultaneously conduct peace support and humanitarian aid operations. As a result, divisions have on a number of occasions been torn apart and reassembled to match the force requirements of the combatant commander. This process not only takes more time to execute, but causes severe upheaval for both the units deploying and the division that is providing the forces. Clearly the United States Army's typical area of operations has changed over the past 15 years. However, the true acceptance of joint operations has also changed. In short, the environment for all types of operations has changed and these changes have necessitated changes in the way that the United States Army organizes

United States Army transformation is an ongoing process that is designed to change the fundamental way in which units organize, train and wage operations. As figure 4 shows, the current United States Army structure has three levels of headquarters above brigade level. In the new construct, this number of higher headquarters will be reduced to two, currently known as the Unit of Employment (x) and the Unit of Employment (y), or abbreviated, the UEx and UEy.

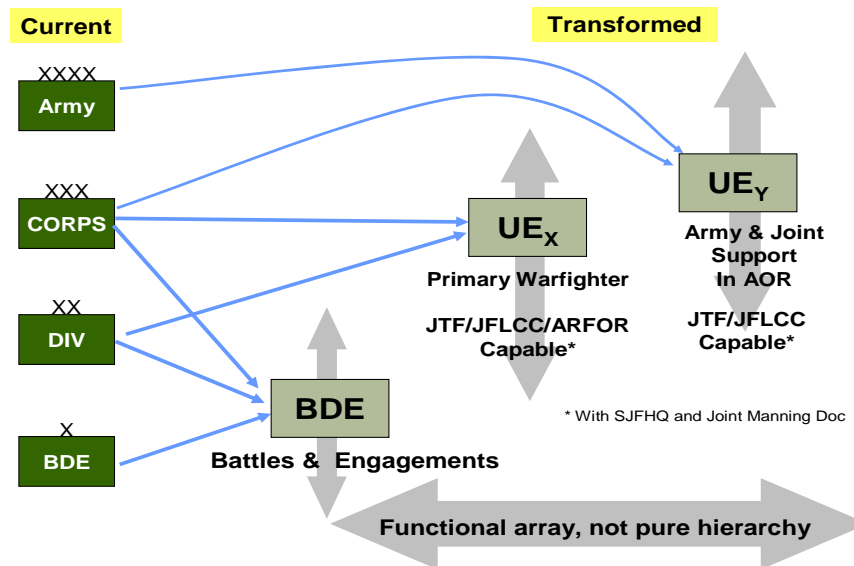


Figure 4: Levels of Command²²

UEy

A UEy will be organized and equipped to act as the Army Service Component Command (ASCC) for each of the Regional Combatant Commands. As such, the UEy will have administrative control of all Army forces within the Regional Combatant Commander's area of operations with the responsibility of being the force trainer and provider as well as the sustainer for those troops under operational command of the Regional Combatant Commander. Additionally, the UEy commander will retain the ASCC responsibility of providing common user logistics to other services assigned to the area of operations. As with the ASCC, operational reception, staging, onward movement and integration functions will be the responsibility of the UEy, through the subordinate Theater Support Command.²³

²² Ibid.

²³ "Army Comprehensive Guide to Modularity", Version 1.1, 8 October, 2004, 4-11.

In addition to the ASCC responsibilities, the UEy will have the ability to act as the Joint Land Force Component (JFLC) for major combat operations.²⁴ Typically for an operation of this scale, it is expected that the JFLC responsibilities of the UEy will be passed to a UEx once major combat operations transition to stability operations.

UEx

“The UEx is the Army’s primary tactical and operational level warfighting headquarters. It is designed as a modular command and control headquarters for full spectrum operations.”²⁵ As such, any brigade size Canadian unit being placed under operational command of American forces will find themselves reporting directly to a UEx.

The UEx will not have any fixed structure beyond the headquarters which will be capable of controlling up to six brigades under normal conditions. Where span of control issues become a problem, the capability of having a higher echelon UEx with a more senior commander will exist. Figure 5 shows a typical joint task force (JTF) organized for a major combat operation with an intermediate UEx.

²⁴ Ibid., 4-6.

²⁵ Ibid., 5-1.

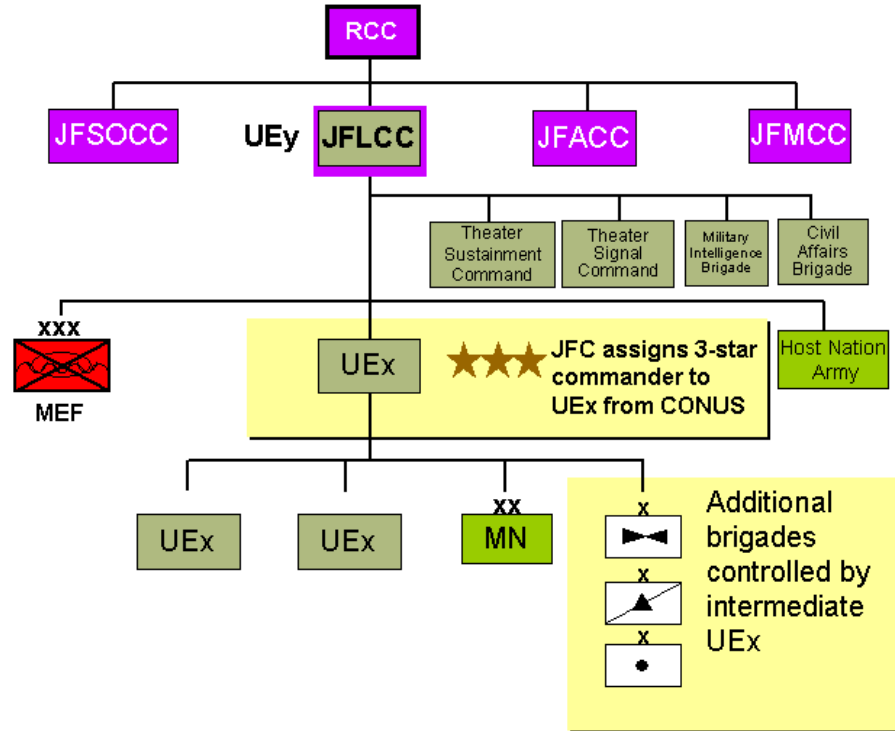


Figure 5: UEx as the intermediate headquarters in a major combat operation²⁶

As will be discussed in the following section, there are six types of brigades that can be assigned in varying numbers to the UEx depending on the operation and the planning factors of mission, enemy, terrain and weather, troops and support available, time available and civil considerations, referred to in the United States Army as METT-TC. The six types of brigades that may be placed under operational control of a UEx are a maneuver brigade combat team (BCT), an aviation brigade, a fires brigade, a reconnaissance, surveillance, target acquisition (RSTA) brigade, a maneuver enhancement brigade and/or a sustainment brigade.

UEx are tactical units with the mission of achieving operational objectives through the accomplishment of tactically decisive, shaping and sustainment operations. A UEx will also be capable of acting as the Army Forces (ARFOR) headquarters or the Joint Force Land Component Command (JFLCC) for operations other than those involving major combat operations (MCO)

²⁶ Ibid., 5-5.

where, as stated above, the UEy will be deployed to theater to exercise those responsibilities.

During smaller operations where the land forces comprise the preponderance of forces, the UEx headquarters may receive the significant augmentation necessary to act as the JTF headquarters.

UE_x as Joint Task Force

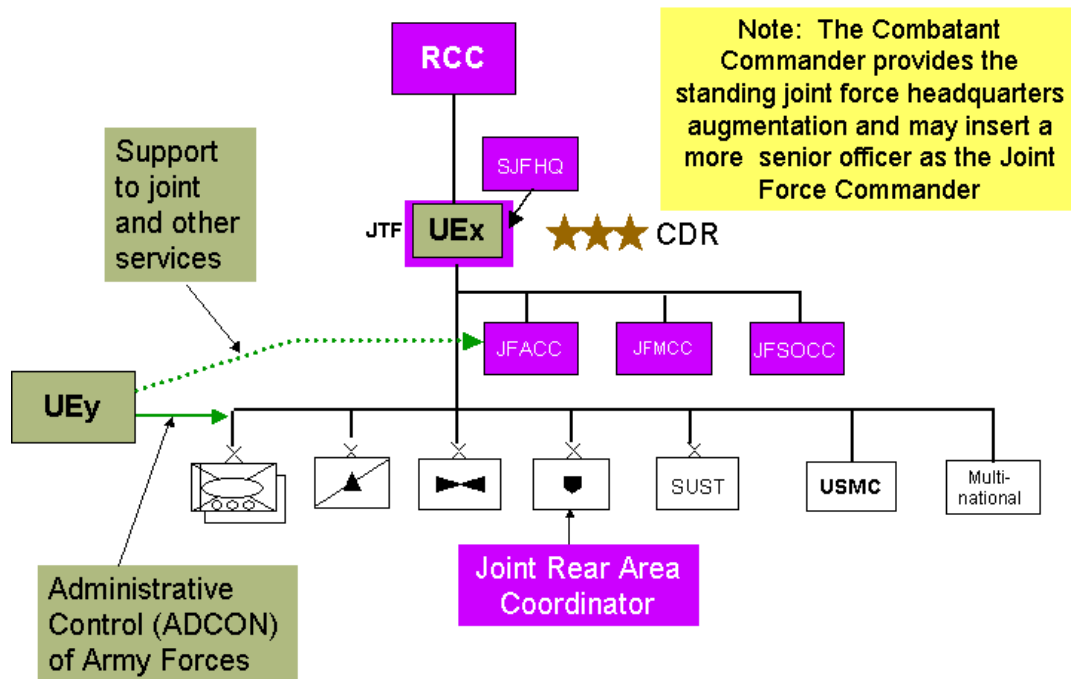


Figure 6: UEx as the JFC²⁷

In any case, the UEx headquarters will be capable of planning both mobile and precision strikes as well as battalion to brigade level air assault operations. They will also be capable of establishing temporary bases along a line of operations within their area of operations. Although the UEx will be task organized depending on the factors of METT-TC, for MCO they will require two to four BCTs and at least one each of the other five supporting brigades. Figure 7 shows the typical UEx organization that will be grouped together in garrison to allow the conduct all arms training.

²⁷ Ibid., 5-6.

A UE_x intended to fight in an MCO as a tactical HQ must have at least one each of the supporting brigades and 2-4 maneuver brigades to be a complete combined arms team.

Example UE_x in Garrison

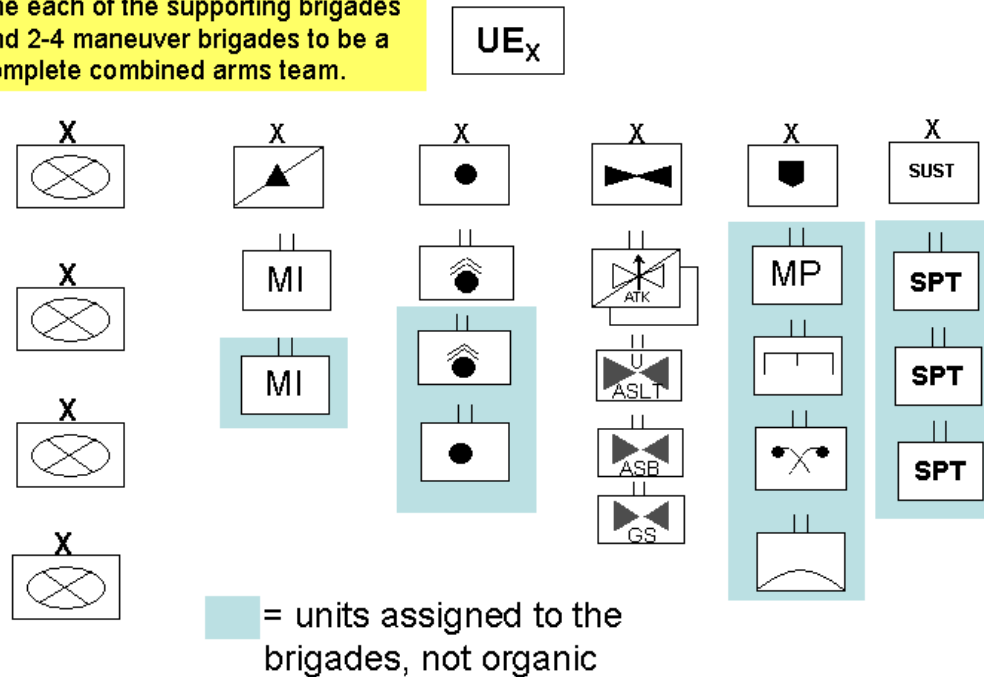
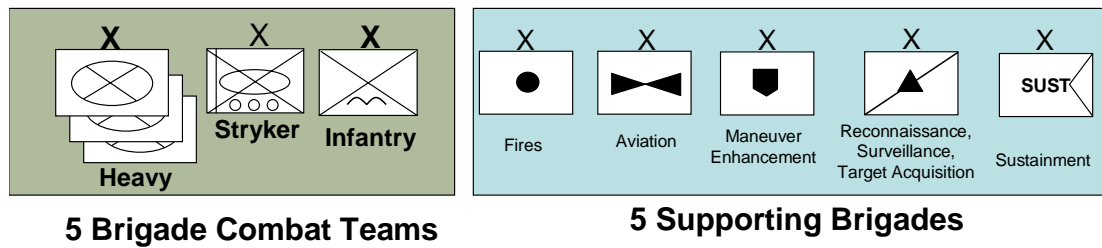


Figure 7: CONUS based UEx Organization²⁸

Figure 8 below shows sample UEx organizations for both offensive and stability operations. As can be seen, this is the modularity inherent to the UEx concept that is lacking in the current division based United States Army. As can be inferred, this modular construct for building a UEx makes it particularly suited to coalition operations. This will be considered further in the final section of the paper. Before possible coalition operations can be considered however, first the basic building blocks of the UEx must be understood.

²⁸ Ibid., 5-3.

Example: Offensive Operations



Example: Stability Operations

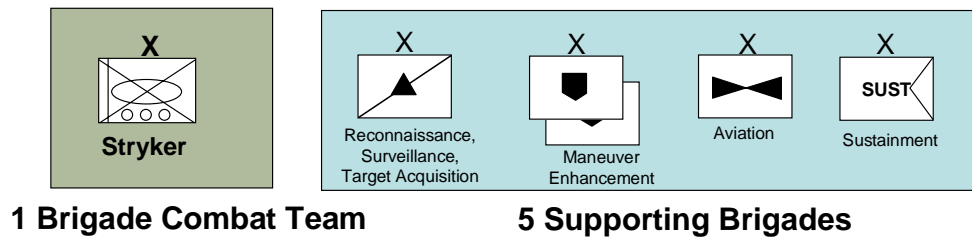


Figure 8 : Example UEx Configurations.²⁹

Unit of Action

General

Units of Action (UA) will be the tactical fighting force of the transformed army. It will be responsible for conducting offensive, defensive, stability and support operations anywhere in the world.³⁰ As with Canadian units, the operational concept for the UA is built upon the cornerstone of mission command and mission type orders.

According to United States Army Field Manual (FM) 6-0, mission orders are, “a technique for completing combat orders that allows subordinates maximum freedom of planning and action in accomplishing missions and leaves the “how” of mission accomplishment to

²⁹ UEx Concept Summery, 250900 Jun 04, 5.

³⁰ Unit of Employment Operations White Paper, 16.

subordinates.”³¹ Except for semantics, the reader will note that this is the same definition found in the Canadian FEC. Also according to FM 6-0, mission command, “is the conduct of military operations through decentralized execution based on mission orders for effective mission accomplishment. Successful mission command results from subordinate leaders at all echelons exercising disciplined initiative within the commander’s intent to accomplish missions. It requires an environment of trust and mutual understanding.”³² Modern United States Army combat units are capable of generating significantly more combat power than those of even a few years ago due to the truly joint integration of forces. As well, current information systems allow commanders at all levels to achieve almost total awareness of their subordinate unit locations. The combination of these two factors makes mission command and mission type orders the real decisive factor on the battlefield. With smaller units being able to direct an ever increasing degree of effects on a target, and the higher commander being able to monitor their location and the effects being generated, clearly there are tremendous benefits to the initiative gained by mission command and mission type orders.

What were previously called battlefield operating systems (BOS) and battlefield functional areas (BFA) are, in the new doctrine, now called warfighting functions. Warfighting functions are the tactical functions that the UEx and UEy commanders assign as tasks to subordinate UAs. The list of warfighting functions are: command and control (including leadership), maneuver, fires, battlespace awareness (intelligence, surveillance and reconnaissance), logistics and protection (to include chemical, biological, radiological, nuclear, and high yield explosive (CBRNE) defense).³³ Warfighting functions have been deemed more appropriate to a joint operational environment. Although it could and has been argued by some

³¹ United States Army Field Manual 6-0, *Mission Command*, August, 2003, 1-17.

³² Ibid.

³³ UE Operations White Paper, 25.

that former terminology of BOS and BFA are more suited to land operations, the United States Army believes that the new terminology will better reduce task ambiguity in a joint environment.

Purposed based operations is the United States Army's method of arranging operations in a logical manner based on purpose rather than geography, time or echelon ³⁴ At UA and above, operations are defined as either decisive, shaping or sustaining. Decisive operations are those which are nested with the mission of the higher commander, and as such, directly accomplish the mission. Planning is conducted by identifying the decisive operations that must take place and then designing shaping and sustaining operations that will support the decisive operation. Shaping operations are those that create or maintain conditions necessary for the success of the decisive operation. Shaping operations include security and information operations. Sustaining operations enable the decisive and shaping operations to take place. They include CSS, force protection, terrain management and infrastructure development. It is important to understand that no unit is exclusively intended for decisive, shaping or sustaining operations. It is the commander's intent and the operational plan that determines the unit's function within a certain time or space. For example, during offensive operations, maneuver forces would normally be the decisive operation. During a humanitarian support operation, CSS may be the decisive operation with maneuver troops shaping the battlefield by providing security.

Types of UAs

As mentioned earlier, UAs do not have a standard organization but instead are task organized based on requirements of the operational commander. In order to meet the operational framework and to cover all warfighting functions, several UA "typical" constructs have been developed in order to provide the start point for both those planning operations and those responsible for force generation and training. The types of UAs are: Maneuver Brigade Combat

³⁴ Ibid., 26.

Teams (BCTs), RSTA Brigades, Fires Brigades, Aviation Brigades, Maneuver Enhancement Brigades, and Sustainment Brigades. The purpose and tasks of each of these brigades will be discussed in turn.

Maneuver Brigade Combat Team

Brigade Combat Teams provide the commander with maneuver forces and, in most operations, it will be one or more BCTs that will be assigned the UEx's decisive operation. Sufficient numbers of BCTs are included in the UEx to allow a regular cycling through a base camp where rest and resupply can take place. Even when the RSTA brigade is controlling air and ground reconnaissance units, security operations (guard, screen, cover) are the responsibilities of the BCT and not the RSTA brigade. In certain cases the aviation Brigade may be assigned the task of screening. There are three types of BCTs, heavy, Stryker and infantry. Examples of each are shown below at figure 9.

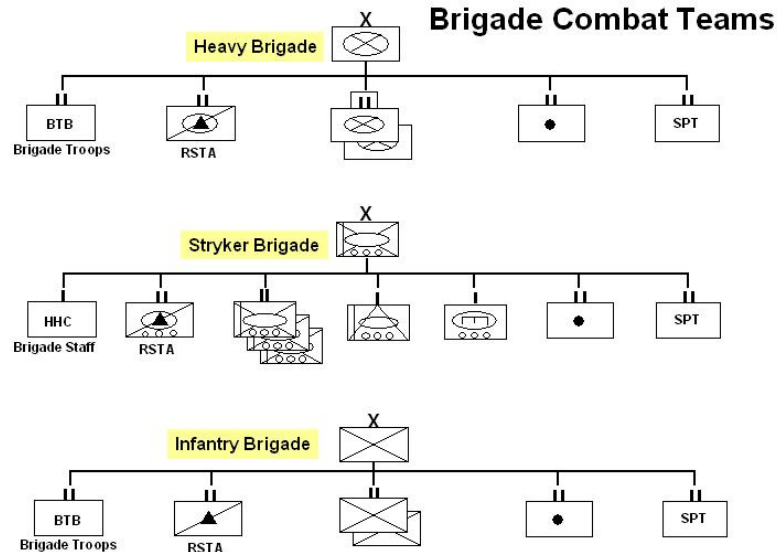


Figure 9: Maneuver Brigade Combat Teams.³⁵

³⁵ UE Ops Version 3.5, 85.

As stated, in most operations a maneuver BCT will be the supported unit that has been assigned the decisive the UEx's operation.

RSTA Brigade

As with their Canadian counterparts, United States Army commanders designate priority information requirements as part of the commander's critical information requirements. It is the mission of the RSTA brigade to assist the UEx G2 by gathering the necessary information. The UEx commander's intent and priority information requirements become the mission orders for the RSTA brigade commander who controls all UEx RSTA assets not task organization or integral to other brigades. Figure 10 shows a typical RSTA brigade.

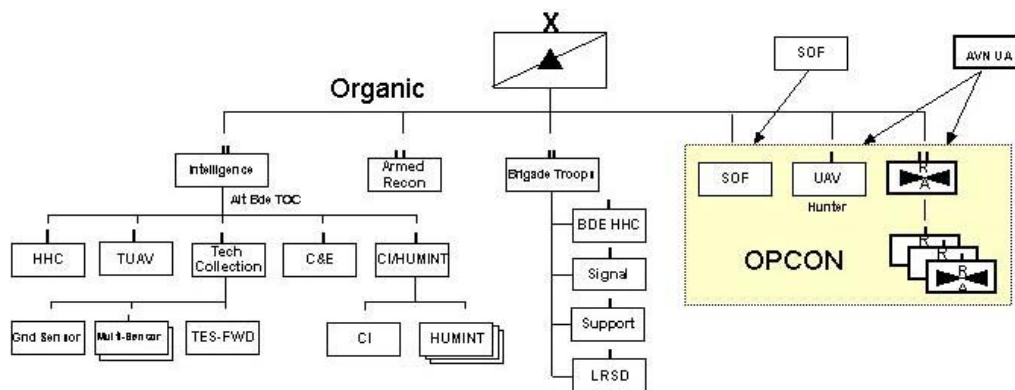


Figure 10: Typical RSTA Brigade³⁶

The RSTA brigade will be task tailored depending on the specific mission and could include additional assets from the UEx or UEy or national level assets. It is expected that the RSTA brigade commander will be the supported commander receiving assets from both maneuver and aviation brigades where in most operations it is expected that reconnaissance, attack aviation and UAV assets will be placed under operational control. Although the RSTA brigade will control significant assets, its tactical task will be limited to gathering information

³⁶ Ibid., 87.

with a view to answering the commander's priority information requirements and developing a common operating picture. Offensive, defensive and security operations will be performed by a maneuver BCT. In the case where information cannot be gathered directly but instead must be fought for, once again the maneuver BCT will be assigned the task. Information developed by the RSTA brigade will be posted to a distributed data base that can be accessed by commanders, analysts and shooters at all levels. This method of information distribution is known as vertical and horizontal integration. As will be discussed later, the availability of this information to coalition partners has been very limited in the past. This shortfall is more a function of operational security than technical limitations and will have to be addressed if truly integrated coalition operations are to be achieved.

This information will be used by fires and aviation brigades to cue and/or support strike operations. According to United States Army doctrine, strike operations are those operations conducted outside of the maneuver BCT's area of operations with the aim of generating tactical or operational effects against the enemy. There are two types of strikes, mobile and precision. A mobile strike is a coordinated, combined arms attack beyond the reach of the maneuver BCTs. Normally the decisive arm will be army aviation, ideally supported by joint fires as well as precision army fires. Manoeuvre BCTs will normally be used in sustaining operations such as the establishment and protection of forward arming and refueling points. Precision strike operations are conducted by the fires brigade and consist of Army precision fires being placed deep in the UEx's area of operation. Precision strikes have two advantages over mobile strikes. First, there is no risk to aircrews. Second, precision strikes are more immediate with target acquisition to effects delivery being measured in minutes. The downside is the effects are more difficult to assess and that an attack against a maneuvering enemy is near impossible.³⁷

³⁷ Ibid., 89.

Fires Brigade

The mission of the fires brigade is to plan, coordinate and execute precision fires based on mission orders from the UEx. Its tasks include the coordination and massing of all precision fires within the UEx area of operations. Its second task is to provide reinforcing fires to other UEx brigades, both lethal and non-lethal. As with the other brigades in the UEx, they will be task ordered based on the factors of METT-TC. However, they will normally be equipped with precision rockets, advanced cannon artillery and counter-fire radars. Often they will have electronic assets attached under operational command. Figure 11 depicts a typical organization for the UEx fires brigade.

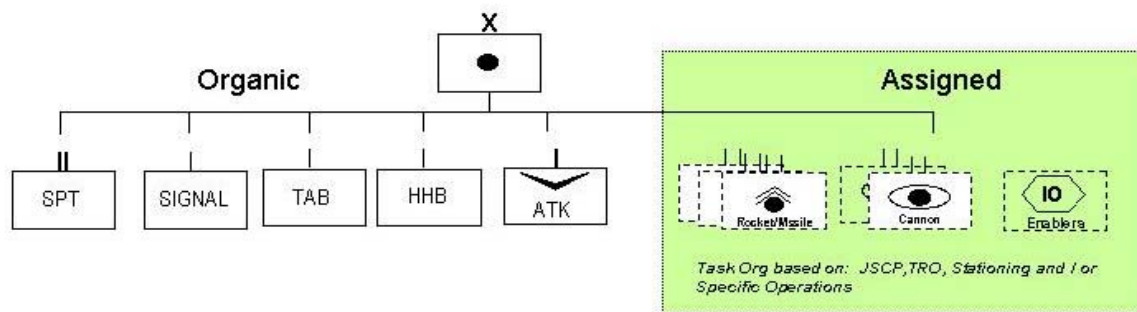


Figure 11: Typical Fires Brigade Configuration.³⁸

Aviation Brigade

According to the UE Operations White Paper, “The Aviation Brigade receives priorities and mission orders from the UEx, to conduct and support reconnaissance, security, mobile strike, vertical maneuver, support to close combat with ground forces, aerial sustainment, and C2 operations.”³⁹ The aviation brigade is the UEx commander’s mobile strike force. It will normally have direct support from the fires brigade and operational control of assets from the RSTA brigade. Elements of the BCT, maneuver enhancement brigade and sustainment brigade

³⁸ Ibid., 91.

³⁹ Ibid., 92.

may also be under operational control for security and sustaining operations. The aviation brigade will also be capable of conducting screening operations for the UEx commander. For guard and cover missions, the aviation brigade will provide the maneuver forces with reconnaissance, attack and lift capabilities. The aviation brigade is also capable of providing support to maneuver enhancement brigade elements when conducting area and route security. In accordance with the spirit of the modular force, aviation brigades will be task organized depending on the factors of METT-TC. However, in the vast majority of cases they will contain integral reconnaissance, lift and attack capabilities.

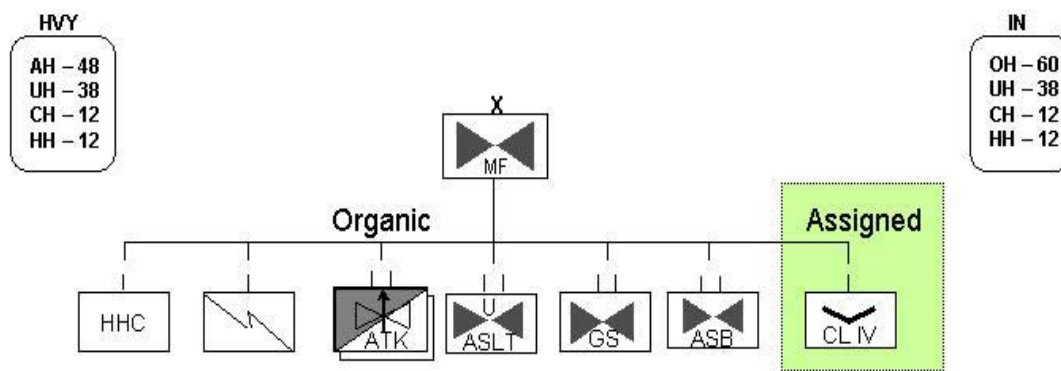


Figure 12: Aviation Brigade⁴⁰

Maneuver Enhancement Brigade.

The UEx maneuver enhancement brigade is responsible for all protection outside of the maneuver BCT's area of operations. United States Army doctrine defines rear area threats much more clearly than the Canadian Army does, and the concept of employing maneuver enhancement forces for rear area security is a concept that is woefully absent from Canadian doctrine where, except in only the most rare circumstances, units outside of the maneuver units' area of

⁴⁰ Ibid., 92.

operations are in reality entirely responsible for their own protection. According to United States Army doctrine, the threat to the rear area is defined according to the following table:

Threat Level	Example Threat Forces	Response
I	Agents, saboteurs, sympathizers and terrorists	Unit, base and base-cluster self-defense measures, maneuver enhancement brigade integrates security measures.
II	Small tactical units, unconventional warfare forces, guerrillas, and bypassed enemy forces	Unit self-defense measures with reinforcement from maneuver enhancement brigade assets, including convoy protection.
III	Company-sized or larger tactical –force operations (including airborne, heliborne, amphibious, infiltration, and bypassed enemy forces). May also include large-scale civil-disturbance	Maneuver enhancement brigade commits the Tactical Combat Force (TCF), reinforced with aviation, MP and fires

Table 1: Rear Area Threat Classifications⁴¹

The maneuver enhancement brigade controls the security operations throughout the UEx area of operations, less those directly controlled by the maneuver BCT. To do this, they are task organized according to the specific operation and the factors of METT-TC. Maneuver enhancement brigades will be able to perform the following tasks when necessary⁴² :

- Establish, secure, and maintain ground lines-of-communication (against level I or II threats)
- Provide area security.
- Establish, secure, and maintain airfields.
- Repair and restore infrastructure.
- Area damage control and mitigation.
- Environmental restoration.
- Detect and neutralize explosive hazards (including mines, improvised explosive devices, and unexploded ordnance).

⁴¹ Ibid., 93.

⁴² Ibid., 94-95.

- Enhance protection and security of critical facilities and equipment
- Detect and neutralize chemical, biological, radioactive and nuclear (CBRN) hazards.
- Act as a rear area headquarters.
- Install and remove bridging along a LOC.
- Internment & Resettlement operations.
- Air and missile defense.

To accomplish these tasks, the maneuver enhancement brigade will contain a combination of military police, military engineers, air defense and CBRNE. Most importantly, it will normally have a combined combat arms element to act as the UEx tactical combat force. This force will provide the UEx with a force capable of defeating threat level III forces. It is important to note that UEx units remain responsible for their own security up to threat level II. However the maneuver enhancement brigade will coordinate base clusters in defense of level II threats. As will be seen during the analysis in following sections of this paper, the maneuver enhancement brigade provides a capability that is woefully lacking in the Canadian Army. A sample maneuver enhancement brigade is shown at figure 13.

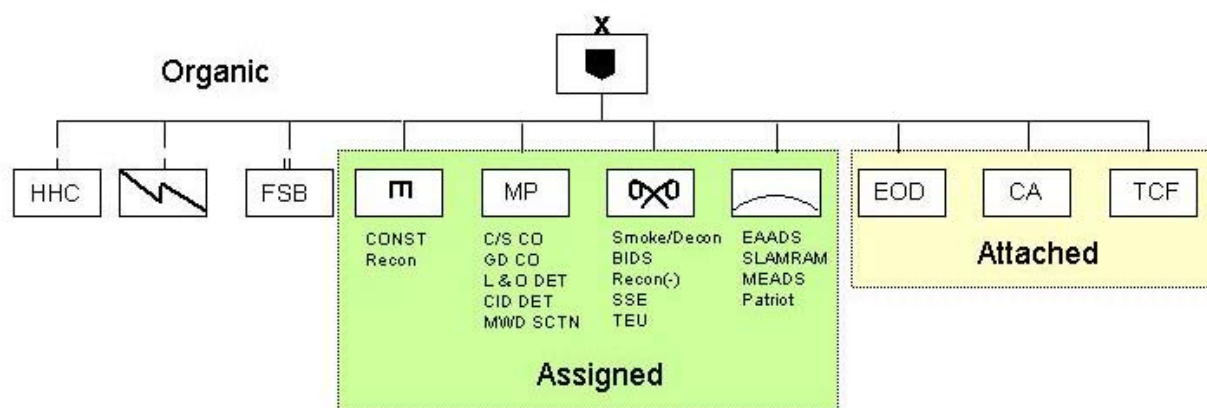


Figure 13. Typical Maneuver Enhancement Brigade⁴³

Sustainment Brigade

Sustainment brigades will be responsible for multi-function combat service support operations. When responsible for operational level CSS, they will be under command of the Theater Support Group in support of the UEy. There will also be sustainment brigades under operational command of the UEx for distribution-based tactical CSS to the UEx brigades with task of conducting mission staging and replenishment operations.⁴⁴ Basing of sustainment brigades is dependant on the threat level. Where the level III threats are deemed minimal, sustainment brigades will be assigned an area of operations. Where the threat level is beyond the scope of the sustainment brigade assets, they will be placed in an area of operations belonging to a maneuver enhancement brigade.

Replenishment operations conducted by the UEx sustainment brigade differ significantly from the Canadian model, and as such require further discussion. The resupply of the UEx is accomplished through routine replenishment and mission staging operations. Replenishment operations are routine in nature and consist primarily of fuel, food and fast moving spare parts. In

⁴³ Ibid., 94.

⁴⁴ Ibid., 97.

Canadian parlance, it would be a routine “push” of primarily combat supplies. Most brigades will be replenished in this fashion four to five times before requiring mission staging. Replenishment operations are often supported by aviation and intra-theater lift assets. Many of the UEx non-maneuver brigades can be supported solely with replenishment operations without the need for mission staging. Mission staging operations are planned by the UEx and conducted by the sustainment brigade. The aim of mission staging is to replenish, refit and rearm a brigade to allow them to operate for three to seven days at high tempo. Mission staging for a single brigade by a sustainment brigade will normally take between 24 and 72 hours.⁴⁵

The UEx has limited ability to conduct reconstitution operations. Normally, sustainment brigades will support the redistribution of equipment and supplies during mission staging. Personnel replacements will only be done within the UEx area of operations on an individual basis. Units becoming combat ineffective will be reassigned a new task by the UEx commander. When necessary, units will be replaced in theater. The outgoing unit will be reconstituted normally at their home station.⁴⁶

Chapter Three – Coalition Operations – Past and Present

Background

Having gained a general understanding of the current and future force structure and capabilities of the United States and Canadian armies, the discussion will now turn to past coalition operations with the aim of gaining an understanding of our past, while leading us to our future. Specifically, three topics will be discussed. First, this chapter will briefly look at the First Special Service Force, a unit that marked the first time Canadian and American soldiers fought on

⁴⁵ Ibid., 99-100.

⁴⁶ Ibid.

the battlefield together as a coalition force. Next, Canada's ongoing contribution to NATO's Immediate Reaction Force (Land) (IRF (L)) will be discussed. This contribution is important to the discussion as it provides us with a look into the type of force that the Canadian Army is capable of deploying on short notice. More importantly it will allow us later to draw a connection between a current contribution to a NATO force and the potential of contributing a similar force to the United States as a future coalition standing force. Lastly, the more recent United States/Canada coalition operations in Afghanistan will be discussed. Lessons learned, specifically those of an interoperability nature, will be examined. As most United States Army after action reports remain classified while the majority of their Canadian counterparts are not, the bulk of information presented in this section will be of Canadian origin. Although not ideal, it should still serve the purpose of this paper since problems identified by the Canadian's provide key information for both Canadian and United States future planners.

The First Special Service Force

The aim of this section of the paper is to provide a very short history of the first real collaboration between Canada and the United States during war, the formation of the First Special Service Force. Although the ultimate aim of this paper is to propose the way ahead for coalition operations between Canada and the United States, this section has less to do with that aim than it does with opening the reader's mind to future possibilities by showing how the leaders of our past were able to look for unique solutions and make them work.

The seed of the idea for the First Special Service Force was planted by the Briton, Geoffrey Pyke. A psychologist and veteran of the Great War, Mr. Pyke had a keen mind as evidenced by his twice successful escapes from German prisoner of war camps during the Great War. In 1942, finding a way to attack German oil refineries, hydro-electric facilities and

submarine pens, primarily in Norway, was a problem that consumed Mr. Pyke.⁴⁷ Having designed the concept for an over snow vehicle, he managed to arrange a meeting with Prime Minister Churchill and United States Army Chief of Staff Marshall. The plan entailed taking a group of specially trained soldiers and dropping them and their special “plough” vehicle deep into enemy territory in order to commit sabotage on German high value targets. When Marshall heard the plan he felt that the extraction of forces from Norway would be so difficult that a mission there would be suicidal. However, he liked the premise of idea and as a result he issued a letter to Lieutenant Colonel Robert T. Frederick directing him to form and train a unit of United States and Canadian officers and soldiers. The new unit would be codenamed Project Plough. His short letter is interesting in its brevity. In only one page he directs Frederick to requisition whatever he needed to organize, train and command a brand new multinational unit. Interestingly, Marshall includes the statement, “(officers and soldiers of other countries) may be placed either under the command of, or in command of, United States Army personnel as is appropriate to the individual’s rank, and as is desirable for the efficient accomplishment of the mission.”⁴⁸ With this letter the First Special Service Force was born.

The force stood-up on April 20, 1942 and comprised an all volunteer force from the United States and Canadian Armies. They trained at Fort William Henry Harrison, Montana and after 15 months of intensive training were ready for combat. Over the next year they would conduct commando operations in Italy and France, always accomplishing their mission in spite of heavy losses. Their operations were so inventive and successful that they provided the inspiration for the classic military movie, “The Devil’s Brigade” a nickname that was adopted from a

⁴⁷ Lieutenant Colonel Robert D. Burhans, *The First Special Service Force*, (Nashville: The Battery Press, 1947), 2.

⁴⁸ *Ibid.*, 11.

German after action report that referred to the unit as the black devils due to the commandos use of black face paint.⁴⁹

To provide a proper account of the service that the FSSF gave to their country is beyond the scope of this paper. However, the history FSSF provides an example of how Canadian and American forces in the past, when given the proper resources, training and authority, can produce results greater than the sum of the whole. Many soldiers that served with the unit felt that they owed much of their success to the competition that was inherent to a multi-national unit. Regardless of the reasons for their success, the fact remains that it took leadership with vision and the ability to assume risk to move beyond conventional thought and allow the creation of arguably one of the greatest military units in history.

NATO's Immediate Reaction Force (Land)

Canada's contribution to NATO was traditionally the mechanized brigade group that was pre-positioned in Germany that represented the forward deployed elements of a division commitment to the security and defense of central Europe. With the disbandment of its forward deployed brigade in 1992, Canada's land commitment to NATO was to provide a combat capable infantry battalion designed to rapidly respond to overseas missions as part of NATO's Immediate Reaction Force (Land). NATO's ground reaction forces are organized into the IRF (L) and the Allied Command Europe Rapid Reaction Corps. The IRF (L) is a brigade sized multinational unit of about 5000 soldiers.⁵⁰ Canada meets her responsibilities to the IRF (L) by earmarking an infantry battle group consisting of three infantry companies, a combat support company, as well as an engineer and logistics company. This unit is capable of deploying a vanguard company on

⁴⁹ Joseph A. Springer, *The Black Devil Brigade*, (Pacifica California: Pacifica Military History, 2002), 164

⁵⁰ United States Department of Defense, Report on Allied Contributions to the Common Defense, June 2002, III-13.

72 hours notice to move and the full battle group in days 10 days notice to move.⁵¹ As part of this commitment, Canadian Forces personnel that are designated to coordinate potential future operations spend a large amount of their energy just on issues evolving interoperability. It was Canada's IRF (L) designated unit that deployed to Afghanistan in 2001 as part of the GWOT. Clearly as member of NATO, Canada has a responsibility to the common defense mandate of the organization and throughout the last decade of budget cutbacks, it has continued to make its contribution, albeit much smaller than that of the Cold War. The point this discussion however is not to expound on the contributions that Canada is making to NATO, but instead to demonstrate that there are standing commitments to common defense already in place. Achieving interoperability within the context of NATO is a daunting task that the Canadian Army has worked to solve continuously for many years. How much more effective would it be to fulfill our NATO commitment by concentrating on interoperability only with the United States Army? As the next section will show, there are issues, but interoperability between the United States and Canadian armies is achievable.

Operation APOLLO

Operation Apollo was the Canadian contribution to the United States led GWOT. It included all Canadian Forces elements that were committed to the United States Central Command (United States CENTCOM) Area of Operations (AOR). Operation Apollo is an ongoing operation, with Canadian elements organized under the control of Canadian Joint Task Force South West Asia (CJTFSWA). The Canadian prepared Staff Action Directive (SAD) is a tool designed to identify the major issues and lessons learned from Canadian Forces operations. SAD analysis is based on interviews with key staffs, a review of DND reference material and documents, and the reports arising from the first year of Operation Apollo.

⁵¹ Canadian Forces Backgrounder, "Immediate Reaction Forces (Land), November 16, 2001.

The stated mission of Operation Apollo remains, “the Canadian contribution to the US led GWOT, and includes all CF elements that are committed to the US Central Command (USCENTCOM) Area of Operations (AOR). It does not include the CF elements involved in defence of North America under NORAD (OP NOBLE EAGLE), or in other ‘homeland security’ operations. OP APOLLO is an ongoing operation, and all the CF elements committed come under the control of the Canadian Joint Task Force South West Asia (CJTFSWA).”⁵²

Operation Apollo officially began on October 26, 2001 with the formation of CJTFSWA, although by October 9th, the lead elements of the task force had already arrived at CENTCOM HQ in Tampa to begin planning Canada’s contribution to the GWOT. Within a short period of time, Canada had contributed six ships to U.S naval operations in the Gulf of Oman, a number of transport and maritime surveillance aircraft, in general support to operations in south-west Asia.⁵³ In February 2002, the 3 Princess Patricia’s Canadian Light Infantry (PPCLI) Battle Group (battalion task force equivalent), was deployed to Afghanistan under operational control of a United States brigade task force from 10 Mountain Division. Numerous significant interoperability lessons were learned from this operation.

Strategic and Operational Lessons

Many of the deficiencies identified in the post operations reports indicate a lack of focused strategic planning during the initial stages of Operation Apollo. Most notably are the comments that Canadian Army forces were offered and accepted by the United States before a mission for them had been identified. Although laudable that Canada was so quick to offer support to the United States following the attacks of September 11, 2001, in retrospect it became clear that more deliberate planning would be required in the future. American planning was conducted without the integration of the available Canadian units. Whether the planning occurred

⁵² Operation Apollo SAD, Annex B to 3350-165/A27 dated 30 April 2003, B-1/41.

⁵³ Ibid.

before or after the available Canadian units were identified is not clear. Nonetheless, the Americans accepted the offer of a Battle Group without knowing how they would eventually be employed or to what extent the Canadians had the capability to deploy and later to support themselves in theater. Obviously this was not an ideal situation as it showed the real lack of interoperability planning between the two allies and as expected, this confusion at the strategic and operational levels was felt at the tactical level. 3 PPCLI Battle Group had the location of their deployment within Afghanistan changed three times before they left Canada. As well, their mission changed from humanitarian assistance to peace support to combat operations while they were conducting a compressed version of pre-deployment training. Although it cannot be verified, it would be safe to assume that American planners were also feeling the negative effects of the confused strategic guidance. This analysis is not an indictment of either country's planners but rather demonstrates their ability to adapt to a rapidly changing situation without any prior unit affiliations. Should the current state of interoperability between the two armies remain status quo, there is no reason to believe that the next mission will proceed any differently and once again planners will have to "make it up on the fly".

Clearly coalition planning between the two countries requires improvement. Ideally, American and Canadian planners should have an ongoing procedure for identifying over certain periods of time which Canadian Army assets are available for operations along with other key information such as organization and equipment, deployment capability and support agreements. This procedure has proven to work with Canada's commitment of various sized forces to the NATO IRF (L) for many years. It may now be the time to exercise this same level of foresight and planning to future operations with the United States Army.

Tactical Lessons Learned

The tactical lessons learned during the 3 PPCLI Battle Group deployment as part of Operation Enduring Freedom number in the hundreds. For the purpose of this paper, only those that provide the pertinent interoperability lessons learned for future planners will be discussed.

Not surprisingly, operational security was a continuing problem throughout 3 PPCLI's tour in Afghanistan. As a battalion task force, they obviously required a substantial portion of their intelligence to be provided by their parent American brigade. Much to their disappointment however, a majority of the intelligence disseminated by their brigade was designated NOFORN, meaning that it could not be viewed by non-Americans.⁵⁴ Although local arrangements made at a personal level helped to alleviate this lack of information, especially when it came to force protection issues, the systemic problems with security classifications was never significantly improved. Although this problem normally manifests itself at the tactical level, it is a bi-lateral situation that must be addressed at the national level if any kind of true future interoperability is to exist between the two forces.

The second interoperability issue that prevailed throughout the operation was the difficulties the Canadians had in controlling American fast air support. There were two reasons for this shortfall. First, the Canadian Fast Air Controllers were not equipped with the secure PRC-117F radio necessary for secure communications with the American pilots. Second, and a more difficult problem to solve, was the lack of confidence the American forces had in the Canadian Fast Air Controllers ability to conduct terminal guidance of air assets. Again, with much difficulty, both of these problems were addressed at a local level. However, it is clear that unless planning action is taken before the next operation, this situation will remain a serious problem. As was the case in Afghanistan, most if not all future coalition operations will be

⁵⁴ "International Post Operation Report, Operation Apollo Rotation 0, Phases 4-5" Observations by 3 PPCLI BG, 70/76

conducted by Canadian soldiers without integral Canadian fast air assets providing close air support. As such, it is imperative that at the national level, the two armies find a way to certify Canadian Fast Air Controllers to perform terminal guidance of aircraft. This can be done in either of two ways, by Canadians regularly attending the American equivalent course, or by representatives of the United States Army observing a Canadian course and providing the necessary accreditation. Barring either of these systemic solutions, American planners must plan on the attachment of their own Fast Air Controllers into Canadian Army units under operational control.

The aim of this section of the paper was not to suggest each individual way that the Canadian and United States armies could become more interoperable. Instead, and in keeping with the over-arching aim of the paper, it was to demonstrate first, that in the FSSF there has been a standing United States/Canadian unit that has performed brilliantly during operations. Second, that Canada now has a commitment to provide forces to NATO operations in the form of the battalion task force designated for IRF (L) and that this affiliation could meet the same aim, but instead of IRF (L), could be a standing commitment to the United States. Third, that interoperability issues proved to be significant obstacles during Operation Apollo and that these obstacles, unless addressed in a systemic way, will have to be faced over and over again in the future. Accepting these arguments, the discussion logically turns to the way ahead.

Chapter 4 – Interoperability Potential

General

At this point in the paper, it is hoped that the reader has gained an appreciation of the transformation occurring in the United States and Canadian armies as well as the historical and recent coalition operations, both past and present, that Canada has been involved in with the United States Army. It may be useful at this time to remind the reader that aim of this paper is to

recommend ways that the Canadian and United States armies may be able to become more interoperable as a result of the ongoing transformations occurring in both countries. To do this, there must be specific areas where Canada can fit into an American unit that will, like the FSSF, create a sum greater than the whole. Before deciding on where that best fit might be, first we must have an understanding of strengths and weaknesses.

Strengths and Weaknesses

Canadian Army

Having a population that is one tenth of the United States, it is no surprise that in relative terms the Canadian Army is very small when compared with its southern neighbors. Population aside, Canada's Army must also contend with political and social factors that leave it as one of the most under-funded militaries in NATO with defense spending per capita gross domestic product only higher than Luxembourg.⁵⁵ Even within the context of these harsh realities however, there are two important facts that should be considered. First, Canada's defense budget has been increased over the past year and it is expected that funding should remain at least consistent for at least the next five years. Second, the Canadian Army has received, by Canadian terms, a substantial amount of capital equipment over the past decade. These additions include most notably the Coyote reconnaissance vehicle, the Third Generation Light Armored Vehicle (LAV III) and a completely digital communications system. All of these systems are state of the art for what they are designed to do, and as such they enable the Canadian Army unique opportunities to work with the United States Army.

Although the addition of modern weapon systems and an infusion of some additional funding bodes well for the Canadian Army, it still has serious deficiencies in the context of high

⁵⁵ United States Department of Defense, Report on Allied Contributions to the Common Defense, June 2002, E-2

intensity conflict against a modern enemy. The Canadian Army no longer has a deployable tank force and as a result its current direct fire capability is limited to the LAV III 25 millimeter gun. Although an extremely effective weapon against soft skinned and lightly armored vehicles, it is by no means match for an enemy tank, even the ubiquitous models designed and mass produced during the early years of the Cold War. What this means is that the Canadian Army can no longer operate its mechanized forces on a battlefield where there would be a risk of having to engage tanks. Although this is a serious limitation, it by no means precludes their use on the modern battlefield. With this limitation in mind, it is important to note the strengths of the LAV III. As a wheeled armored personnel carrier, it moves very quickly over all types of terrain with surprisingly good mobility for a wheeled vehicle. They also use much less fuel than a tank and since they are lighter than a tank, they are much more easily deployed by air.

The Canadian Army's strengths are not limited to the LAV III. As seen in Afghanistan, Canadian light infantry is world class. Fit, well trained and led, they are capable of completing the full complement of light infantry tasks including company level airborne and airmobile operations. Equipped with the Eryx medium range anti-tank weapon and able to call for fires, they are capable of generating substantial combat power. In Afghanistan much of their potential was limited however due to the lack of ability to communicate securely with American pilots. As stated earlier, during much of the tour they were not authorized to conduct terminal guidance of American close support aircraft.

In terms of ISTR, each CMBG has a reconnaissance company equipped with the Coyote vehicle. The Coyote is a second generation LAV equipped with a 25mm gun and a truly world class radar and optical surveillance suite. In Kosovo the Coyote provided a reconnaissance ability that could not be replaced by any coalition system deployed in theater. In Afghanistan, the

decision to redeploy the Coyote back to Canada required the corps commander to be briefed on how the loss in capability could be mitigated.⁵⁶

Lastly, any Canadian battalion deployed on operations would come with a six gun battery of 105mm light guns. Again, although this gun packs a light punch, it possesses excellent strategic, operational and tactical mobility. Their ability to move into action quickly was put to the test on numerous occasions during their deployment in Afghanistan.

United States Army

It is often stated that the United States possesses the most effective military force that has ever existed. Although this may be debatable, there is certainly no doubt that it is most formidable military in the world today. So why spend time, effort and money developing interoperability with other nations? The answer is as obvious as it is simple, coalition operations provide at the very least, a greater amount of legitimacy, and at best allows the United States to deploy less resources, thus retaining combat power for other current or contingency operations. Having stated the benefits of coalition operations, it is important to understand that the United States Army does not have any glaring shortfalls with respect to its force structure. Unlike the Canadian Army, where one can quite easily recognize deficiencies such as the lack of tanks, heavy artillery and attack aviation, there are no such shortfalls in the United States Army. So the question of determining which coalition troops could be integrated into a United States Army structure cannot be based on requirement per se, but instead on the ability for a Canadian unit to easily integrate into the UEx or unit of action structure.

⁵⁶ “International Post Operation Report, Operation Apollo Rotation 0, Phases 4-5” Observations by 3 PPCLI BG, 41/76

What is the best fit?

There are many options, but the problem can be necked down by concentrating on where the Canadian Army excels, and how those capabilities could be integrated into the new United States Army modular force. Due to the size of the Canadian Army, it can be assumed that the maximum contribution that would be made to the United States Army would be a full CMBG and the smallest being a battalion. With this in mind the question becomes, where can the Canadian Army best be integrated into a UEx or a unit of action? The question of UEx integration will be dealt with first.

As discussed in chapter two, the UEx is an organization designed to be task tailored depending on the tactical and operational situation. This said, there will still be some core units of action that will always be part of the UEx structure. They include some sort of maneuver BCT, a fires brigade if only for its target acquisition and defensive fire tasks, a RSTA brigade and a maneuver enhancement brigade.

At this point we will assume that a CMBG will not be tasked as a BCT. The standard CMBG structure with its LAV III does not allow it to perform any maneuver brigade function less potentially that of a Stryker brigade. Regardless, this task would be the most difficult for the CMBG to fill for several reasons. First, the level of commonality of training and doctrine that would be required to work as an integrated maneuver element fighting side by side with other American brigades in a UEx construct would be much too difficult to realistically achieve. For these reasons the concept of a CMBG acting a part of the UEx commander's maneuver element is seen as untenable. However, there are two other brigades within the UEx where the CMBG would be ideally suited. They are the maneuver enhancement brigade and the RSTA brigade. Each will be discussed in turn.

As stated earlier, the Canadian Army possesses the premiere surveillance and reconnaissance platform in the world. Additionally, within each Canadian infantry battalion there

is also a reconnaissance platoon that also possesses the same Coyote vehicle, albeit without all of the same feature as the brigade reconnaissance company. Regardless, in the context of UEx, the CMBG is ideally equipped and suited for the task of RSTA brigade. In this role the reconnaissance and surveillance systems inherent to the CMBG could best be used. As well, with all of the infantry and reconnaissance vehicles possessing a 25mm gun, a CMBG would have the capability to conduct reconnaissance in depth and under the right circumstances, fight for information, something the UEx RSTA brigade will not be able to do. However, communications and the transfer of classified data could prove to be problematic, but only if the two countries fail to sort out these problems by forming a standing coalition relationship.

The second area where the CMBG could best be used is as the maneuver enhancement brigade. Here again the CMBG's characteristic of being a lightly armored but highly mobile force would be a benefit instead of a drawback. The ability to move quickly to engage and defeat a level III threat would be arguable the best fit for a Canadian CMBG. Highly mobile, adequately armored and armed with a 25mm gun, and having the ability to dismount and conduct light infantry operations in an urban setting are the hallmark of a CMBG. It is also a task that they could excel at using their inherent peacetime organization without the need to undergo lengthy augmentation from other CMBGs and the concomitant training prior to being deployed.

At the battalion level, the opportunities for integration mirror those of the CMBG. Again, the integration of a Canadian infantry battalion into a maneuver of action would be problematic for any operations other than light infantry. In this case however, as shown in Afghanistan, they can be integrated with great success. In the case of maneuver enhancement, the addition of a Canadian LAV III infantry battalion into a maneuver enhancement brigade would be a good fit and no doubt an addition welcomed by American planners.

Although a Canadian battalion with a permanent affiliation with an American brigade, there is one drawback. CMBG training is predicated on having three infantry battalions along with the other combat and combat support resources. To effectively establish a permanent

working relationship with the United States Army, there is a requirement for the unit in question to be permanently earmarked for operations with their American counterpart. For this to work properly, their primary focus of training time and dollars would have to be on training with their American counterparts. Although with sufficient motivation at the national level this is achievable, there would be many justifiable concerns raised by the commander of the CMBG that was habitually losing one of his or her battalions.

The emphases here however is that there are areas where the Canadian Army can provide a battalion size contribution to the US Army. For this scoped down problem there are numerous contributions that can be made that play nicely to US requirements. Canadian Army mechanized infantry battalions are equipped with a LAV III that, although similar to the Stryker vehicle, has the added benefit of mounting a 25mm gun. Although a battalion being permanently committed to a designated American brigade would be an improvement on the current situation, clearly the designation of a CMBG to the task would be the preferred option.

Conclusion

The Canadian and United States armies are undergoing the most significant changes to their organization and doctrine since the industrial revolution. The ongoing information revolution has caused such dramatic changes in society that it was only natural that those changes would drastically affect how the military did business. The days of preparing a military for one type of operation and pre-placing these assets across the world ended with the Cold War. Interestingly, with the demise of the Cold War came the full brunt of an information revolution which, as it changed our societies as a whole, also changed the way our militaries fight.

As the doctrine of Canada and the United States changes, they become more similar. As was shown in chapters one and two, the two countries share a common approach to warfighting with organization, training and doctrine that is, except for semantics, very close to being identical. Integration of such similar forces, given the right amount of support from both countries, would

be a relatively easy task and one that would provide numerous advantages on both sides of the border.

As a result of the new world order and the information age, it now seems obvious that military transformation is not just the flavor of the month but a military revolution that cannot, nor should not, be stopped. These changes present Canada and the United States with a tremendous opportunity. Canada currently has the commitment to provide NATO with a battalion as part of its IRF (L) and it was this designated battalion that become Canada's first contribution to the war on terrorism when it was deployed into Afghanistan under operational control of an American brigade. The Canadian's contribution to this operation was both politically and militarily advantages to both countries. However, as we have seen, there were difficulties with interoperability, most notably with communications, information transfer and recognition and accreditation of Canadian qualifications. A standing commitment to provide a standard force package to the United States for future operations would easily alleviate these problems.

As stated, Canada still maintains a standing commitment to provide troops to future NATO operations in the form of its IRF (L) battalion. If the assumption were made that there will not be a major NATO operation requiring Canada's IRF(L) without the United States being involved in the conflict, than the way ahead becomes even more clear, the killing of two birds with one stone. By increasing our commitment to NATO by assigning a CMBG with the primary task of being the maneuver enhancement or RSTA brigade of a standing United States Army UEx, communications, standing operating procedures, training, qualifications, deployment data and working relationships could be developed. As with the First Special Service Force over 60 years ago, Canada and the United States could again form a coalition unit that would be greater than the sum of the whole.

Although transformation has been an ongoing process in both the Canadian and United States armies virtually since their inception, to posit that the changes occurring today are the most

far-reaching would be an easy argument to make. As such, it would seem that both institutions are at a very important cross-road, where the decisions made today will be of great import. Canada as a nation must somehow come to grips with what it expects of its army. Since the 1970s, Canada has continued to reduce its armed forces capabilities and the fall of the Soviet empire only added fuel to fire. Certainly it could be argued that Canada's only real national defense strategy during the 1990s was to reduce the amount of spending on the military while continuing to put forward a façade of still being a player on the world stage. This lack of political vision has naturally had an adverse effect on not only Canada's ability to conduct military operations around the world, but also how the world perceives Canada's ability to contribute to world security. A new way ahead is needed.

The United States Army's modular force concept can be seen as an excellent opportunity for the Canadian Army to accomplish two very important tasks. First, it can substantially increase its relevancy by forming a standing commitment to provide troops to the US. This will have the added benefit of giving it purpose with respect to funding and capital procurement. It will also provide direction with respect to doctrine and training. At no time will the formal alliance reduce Canada's ability to exercise sovereignty. Similar to the IRF (L), troops may be earmarked, but would not be committed until the nations' leaders make that decision. However, once the decision is made to deploy troops, the way will have already been paved. A coalition unit of Canadians and Americans will add a focus to future coalition operations that it has been lacking since the end of the Cold War. It will also increase its motivation towards training. Like the men of the FSSF, there will be an inherent competition and cooperation between the Forces that will improve the performance of both armies.

There are those that will briefly consider the conclusions in this paper and quickly decide that they are unrealistic - politically infeasible. However, before they do this, they should first consider a future event, one that was seen on numerous occasions by the soldiers of 3 PPCLI in Afghanistan. A Canadian sniper, engaging targets in a foreign country, with the distinct

possibility that he and his partner will soon be overrun by the enemy, and the only chance for survival is the ability to call for American close air support. Will this be an impossible task, or something for which he has trained. Now is the time to decide whether interoperability is just too hard, or whether we owe it to the soldiers of the not so distant future who we will, as we always do, send into harm's way.

BIBLIOGRAPHY

- Appleton, S.B. "The U.S. and Canadian Army Strategies: Failure in Understanding", September 2003.
- Bercuson, D.J. "A Defence Policy to Serve Canadian Interests", *Fraser Forum*, Fraser Institute, May 2004.
- Bland, Douglas. "Canada and Military Coalitions: Where, How and with Whom?", *Policy Matters IRPP* Vol. 3, No 3, Feb 2002.
- Burhans, Robert D. *The First Special Service Force – A War History of the North Americans, 1942-1944*, First Edition, Nashville, Tennessee: The Battery Press, 1947.
- Byers, Michael. "Canadian Armed Forces Under U.S. Command", *Simons Centre for Peace and Disarmament Studies*, Liu Centre for the Study of Global Issues University of British Columbia, 6 May 2002.
- Canadian Department of National Defence, Land Force Command. *Advancing With Purpose-The Army Strategy*. Ottawa, May 2002.
- Canadian Department of National Defence, Land Force Command. *The Force Employment Concept for the Army*. Ottawa, March 2004.
- Canadian Department of National Defence. DLSC Report 01/01, *Future Army Capabilities*. Kingston, January 2001.
- Canadian Department of National Defence. B-GL-300-000/FP-000 *Canada's Army: We Stand on Guard for Thee*. Ottawa, 1998.
- Canadian Department of National Defence. B-GL-300-001/FP-000 *Conduct of Land Operations - Operational Level Doctrine for the Canadian Army*. Ottawa, 1998.
- Canadian Department of National Defence. B-GL-300-002/FP-000 *Land Force Volume 2, Land Force Tactical Doctrine*. Ottawa, 1997.
- Canadian Department of National Defence. B-GL-300-003/FP-000 *Land Force Command*, Third Draft. April 03.
- Canadian Department of National Defence. *DLSC Concepts for Future Army Capabilities*. Kingston, June 2003.
- Canadian Department of National Defence. DLSC Report 99-2, *The Future Security Environment*. Kingston, August 1999.
- Chairman of the Joint Chiefs of Staff. *Joint Publication 3-57, Joint Doctrine for Civil-Military Operations*. Washington, D.C.: U.S. Government Printing Office, 2001.
- Codner, Michael. *Hanging Together: Military Interoperability in an Era of Technological Innovation*, Royal United Services Institute for Defence Studies, London, 2003.
- Cooper, Barry, "North American Military Relations, How Can Canada Help?", *Fraser Form*, Fraser Institute, June 2004.
- English, Michael, "The U.S. Army Modular Force", 2525-17 (CFLO CAC), 15 May 04.
- Fitzgerald, Anne M. "Multinational Land Force Interoperability: Meeting the Challenge of Different Cultural Backgrounds in Chapter VI Peace Support Operations", *Choices*, Vol. 8 No. 3 Aug 2002.

- Granatstein, J.L. "A Friendly Agreement in Advance The Border Papers Canada-US Defense Relations Past, Present, and Future", *Commentary* C.D. Howe Institute No 166, Jun 2002.
- Griffiths, Ann L., Editor, *The Canadian Forces and Interoperability: Panacea Or Perdition?*, Centre For Foreign Policy Studies, Dalhousie University, Halifax, Canada, 2002.
- Holsworth, J.I., Colonel Canadian Forces. "CFMA A Strategy for Canada-US Land Force Interoperability", May 2004.
- Landry, Alan D. "The Joint Lessons Learned System and Interoperability." Thesis, CGSC, 1989.
- MacDonald, Brian. "Will the Canadian Forces Have What They Need When They Need It?", November 17, 2000, A paper for the Conference of the Institute for Research on Public Policy "Challenges to Governance: Military Interventions Abroad and Consensus At Home, November 17-19, 2000.
- Maginnis, Robert L. "Keeping Our Best Army Coalition Relevant by Transforming Together", *Army Magazine* September 2003.
- Maloney, Sean M., "Force Structure or Forced Structure? The 1994 White Paper on Defence and the Canadian Forces in the 1990s", *Choices*, Vol. 10 No. 5, IRPP, May 2004.
- Maloney, Sean M., Ph.D. "Are We Really Just Peacekeepers? The Perception Versus the Reality of Canadian Military Involvement in the Iraq War", *IRPP Working Paper Series* No. 2003-02.
- Middlemiss, Danford W. and Denis Stairs. "The Canadian Forces and the Doctrine of Interoperability: The Issues", *Policy Matters* Vol. 3 No. 7 IRPP, June 2002.
- Richter, Andrew C. "Alongside The Best? The Future of the Canadian Forces", *Naval War College Review*, Vol. LVI, No. 1, Winter 2003.
- Sessions, Sterling D. *Interoperability: A Desert Storm Case Study*, Institute for National Strategic Studies, National Defense University, Washington, 2003.
- Sokolsky, Joel J. "Realism Canadian Style: National Security Policy and the Chrétien Legacy", *Policy Matters*, Vol. 2, No 2, IRPP, June 2004.
- Springer, Joseph A. *The Black Devil Brigade*, Pacifica, California: Pacifica Military History, 2001.
- Stairs, Denis. "Canada In The 1990s: Speak Loudly And Carry A Bent Twig", *Policy Options*, Jan – Feb 2001, IRPP.
- Turabian, Kate L. *A Manual for Writers of Term Papers, Theses, and Dissertations*. 6th ed. Chicago: University of Chicago Press, 1996.
- U.S. Department of Defense, United States Army. *A White Paper - Concepts for the Objective Force*. Undated.
- U.S. Department of the Army, *U.S. Army Draft Modularity O&O Plan*, 3 April 2004.
- U.S. Department of the Army. *FM 3-0, Operations*. Washington, D.C.: 2001.
- Williams, Richard, *Weighing The Options: Case Studies In Naval Interoperability And Canadian Sovereignty*, Centre for Foreign Policy Studies, Dalhousie University, Halifax, Canada, 2004.